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DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

Yellowstone NATIONAL PARK

FILE NO.

FEBRUARY 1929

Monthly Report for

F E B R U A R Y

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File Copy.

IMPORTANT

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STEPHEN T. MATHER,
Director.

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March 6, 1929

The Director,
National Park Service,
Washington, D. C.

Dear Mr. Director:

The following is my report on the activities of the National Park Service in Yellowstone National Park during the month of February, 1929:

000 - General

All roads in the park, except the section between Mammoth Hot Springs and Gardiner, were blocked by snow and were not accessible to travel. During the latter part of the month it was even difficult to negotiate the distance between Mammoth and Gardiner as there were several places along the mile flat where the snow had drifted. The roads around Mammoth were kept as clean of snow as possible with the small tractor and grader but on account of the continued snow and heavy winds late in the month this was somewhat difficult.

100 - Administration

110 - Status of Work

On February 1st Roger W. Toll's appointment as Superintendent, at $4600 per annum, less $400 for quarters, to succeed Horace M. Albright, who was appointed on January 12, 1929, to the position of Director of the National Park Service, became effective. However, Mr. Toll remained in Denver, Colorado to acquaint the new superintendent of Rocky Mountain National Park with his duties and did not report to the Yellowstone during the month. Assistant Superintendent Daum remained in Washington during the entire month, with the exception of a few days spent on a trip to New York, working on accounting matters, and Assistant to the Superintendent Joffe was Acting Superintendent of the Yellowstone.

Due to the resignation of Mrs. Anna E. Greer on January 31, 1929, the park was without the services of a file clerk during the month

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Due to the resignation of Mrs. Anne B. Greer on January 31, 1939, the park was without the services of a file clerk during the month

and the filing work was getting considerably behind. It was necessary to place Mrs. Julie J. Hoodrich on an emergency status toward the end of the month with a view to bringing the files up-to-date.

Five applications were received and approved by the Secretary of the Local Civil Service Board for the position of automobile mechanic, announced in January, the closing date for which was February 14th, and the four men who have been temporarily filling the positions made passing grades and were selected for appointment.

120 - Park Inspections by:

127 - Other Agencies

Mr. V. E. Rush, who has been assigned to special investigation work in connection with the park wilis life spent a part of the month along the north side and the remainder at Mammoth in laboratory, photographic and office work. His report for the month follows:

"The weather for February continued very cold and stormy. Temperatures as low as 47 degrees below zero were recorded at the Buffalo Ranch. The few warm days at the beginning of the month did not crust the snow on the elk range to any appreciable extent and there were no movements of the big herds north of the Yellowstone River to the lower range outside of the park.

"Considerable attention was given to the feeding on Slough Creek this month. There were on February 10th, 307 elk at the Lower Ranch, about 200 at the Upper Ranch, and 55 between the Upper Ranch and the Silver Tip Ranch. Peck says there are a few head (probably five or six) near the old Durst Ranch. The herd of 55 head has never come down to the feeding grounds, preferring to rustle forage in from 24 to 30 inches of snow. The 200 head at the Upper Ranch are much wilder than elk usually are on feed grounds. These come down to eat the hay when it is hauled out from the stacks and go back to the timber as soon as they have eaten. Some few old ones remain on the grounds and some few bulls do not come out of the timber until nearly dark. Only one cow in this bunch is in poor condition.

"At the Lower Ranch the 307 head are divided as follows: 2[illegible] bulls (no spikes); 75 calves and 202 cows. 12 cows were observed to be in poor condition. These stay in close proximity to the feeding grounds the entire day and do some pawing on the meadows and side hills near the feeding grounds. Pawings have been made in 34 inches of snow, which is unusual.

"That considerable food is obtained by the elk besides hay is evidenced by the fact that some of the animals have been observed to lie

down fifteen minutes after the hay sled has finished feeding and while there was plenty of hay remaining on the grounds.

"Approximately five pounds of hay per day per animal is fed at both ranches and two-thirds of one pound of cottonseed cake per head per day is fed at the Lower Ranch at irregular intervals.

"Sanitary conditions on both feeding grounds have been ideal during January and February. Enough snow has fallen almost every night to cover the seeds and feces of the animals so that there could be no possibility of parasitical diseases passing from one animal to another through feeding or from their bedding grounds. Of course, under different weather conditions this might be totally different.

"At the Upper Ranch the cottonseed cake was placed out on the feed grounds in piles of 50 to 100 pounds each, and these have been scarcely touched. At the Lower Ranch the cake was scattered out each day with, and on top of, the small piles of hay, and was eaten to some extent.

"There is no doubt but that this cottonseed cake is a good food for the elk. The seeds of the weeds and grasses eaten by the elk on their natural range contain about the same food elements as the cottonseed, in somewhat different proportions according to the particular plant. I have observed the elk pick out from the hay wild sunflower and thistle stalks by the blossom end and eat the entire plant with apparent relish. The seeds of these two plants are high in protein and carbohydrates similar to the cottonseed.

"In Jackson Hole the elk were fed a cottonseed cake, similar to the one being fed here, in 1920-21, and it was eaten with avidity and the animals appeared to do well on it. The authorities in that region were so well impressed with its merits that an additional quantity was purchased and stored for use in the next emergency that arises.

"The hay on Slough Creek is the best wild hay I have ever seen and was put up last season in excellent shape. It is made up of grasses and weeds that are practically 100% palatable to elk and in food value will rank on a par or more than that of timothy. At the Upper Ranch some swamp grass, which is not high in food value, is mixed in with the more desirable plants but from the quantity I have seen this does not seriously detract from the whole.

"Due to the excellence of the hay which is cropped on Slough Creek and the large additional quantity which can be harvested and stored there it might be well to compare the cost of such hay versus cottonseed cake for feeding in this particular locality.

"For use along the Yellowstone River, above the mouth of Bear Creek, cottonseed cake could be packed in and save the lives of hundreds

of elk during their spring migrations in years similar to the past two. Or, in very severe winters it could be used to good advantage outside the park to prevent starvation. The cake could be stored in some of the ranch buildings which the government owns near Gardiner and packed to the elk as required.

"There is another possibility to the use of this cake, in that its composition could be varied to include medicaments applicable to the treatment of diseases that the animals suffer from.

"If it is desired to keep a number of elk in the Slough Creek region during the summer months, in addition to winter feeding, I would suggest some salt grounds high up on the surrounding ridges. I had some experience with salt grounds for elk on the Sun River Game Preserve a few years ago which proved satisfactory and no doubt such would be the case here.

"The elk study photo file now contains one hundred negatives and about 500 feet of motion picture film. Mr. Henry Dupuis has been furnished with about a dozen photo enlargements from these. Twenty-five specimens of range plants eaten by the elk have been collected and mounted. Partial information has been collected and recorded on about half of the subjects in the elk study outline as agreed on at Berkeley.

"Supplementary to the elk work, two porcupines were dissected and four kinds of internal parasites collected. One antelope stomach examined, a number of coyote stomachs collected for Dr. Marie, and a cow elk skeleton collected and partially cleaned for the University of California. A few minor specimens have been collected for the Park Museum.

"Contact has been made with Dr. Marsh of the Montana Livestock Sanitary Board for the identification of diseased tissue specimens sent him and the Park Service, Biological Survey and Forest Service are all cooperating in a most agreeable way to make the elk investigation work a success."

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150 - Equipment and Supplies

A new filing case for the use of the educational division was received during the month and was turned over to the chief naturalist. Also, a filing case for addressograph plates was received and put into use.

170 - Plans, Maps and Surveys

The Engineering Department continued working up estimates for proposed road reconstruction and maintenance and construction plans for the coming season and final reports on road construction done during the 1928 season.

180 - Circulars, Bulletins, etc.

No circulars or press releases were issued during the month. A copy of the Nature Notes for February is attached hereto.

200 - Maintenance, Improvements and New Construction

No maintenance of roads was done this month. The tractor and grader were employed at Mammoth to keep the roads around headquarters open to travel.

220 - Improvements

Carpenter Shop: During the month the Master Carpenter and his assistants completed the work on the floors and cabinet in Jeffs's quarters, completed the work in the new portion of the garage, built one new bench for the use of the mechanics and two for the carpenter shop and constructed some new shelves in the commissary.

Electrical Department: The chief electrician was occupied during the month in installing a night alarm circuit on the Lake switchboard, rewiring the downstairs in the Wright quarters, changing the wiring over three benches in the garage, repairing several old telephones and placing twelve new reflectors on the ceiling lights in the garage.

Plumbing Department: The plumbing and heating department was engaged during the month in general maintenance to heating plumbing and heating systems, operating four steam boilers and four hot water plants for heating buildings, maintenance to water and sewer systems, inventorying commissary and arranging stock.

Garage: Work in the garage has consisted of overhauling trucks and cars and repairing equipment. The old blacksmith shop has been worked over and made available for garage work. This new addition should greatly facilitate the mechanical work as it has given the garage force much needed space.

230 - New Construction - Roads and Buildings

No change in the status of our new construction, as all our work has been discontinued on account of inclement weather.

240 - Improvement of Approaches to the Park

The contractor on the job north of the park between Corwin Hot Springs and Gardiner has been working night and day in order to get this section completed but has been somewhat handicapped on account of inclement weather. Heavy snows and strong winds during the month have made work difficult and the road between Gardiner and Livingston was impassable several days. The contract for the bridge over the Gardiner River has not as yet been awarded.

260 - Landscape Work

No attempt at landscaping work was undertaken during the month due to weather conditions.

300 - Activities of Other Agencies in the Park

311 - Character of Service rendered to the Public

Services to the public have been limited to the general store at Mammoth, which is operated primarily in winter for the convenience of the local residents.

35[illegible] - Donations and Accessions of all Kinds

A number of books and pamphlets have been obtained during the month from Government Bureaus and through other sources for the Yellowstone Library and for the use of the Educational Division.

400 - Flora, Fauna and Natural Phenomena

410 - Ranger, Naturalist and Guide Service

Ranger activities have consisted principally of the following: Ski and snowshoe patrols for wild life observation and protection, predatory animal hunting, elk feeding at the Slough Creek ranches and Mammoth Hot Springs, deer feeding at Mammoth Hot Springs and Game Preservation Ranch, antelope feeding on their winter range north of the park, care and feeding of the Park Service and Ranger horses at the Yancey Ranch, observing and reporting thermal activities at Mammoth Hot Springs, Norris, Lower, Midway and Upper Geyser Basins; snow depths, temperatures, precipitation and water gage heights have also been reported from station districts throughout the park. Other services have consisted of minor repairs to telephone lines, snow removal from buildings and routine station duties. There has been no variance from the regular patrol schedules although travel conditions have been exceedingly difficult and weather conditions have been unusually severe.

Chief Ranger Hoofring has exercised general supervision over all protection department activities during the month. He was engaged from the 1st to 6th, and from the 23rd to 28th at routine work in the headquarters district, including elk, deer and antelope feeding, mounted patrols, and repairs to pack and saddle horse equipment. He was absent from headquarters from the 6th to 21st, inclusive, on a tour of inspection through the upper park; he proceeded to Fawn Pass, Gallatin, Grayling, Riverside, Madison Junction, Fountain, Old Faithful, Thumb, Lake, Canyon, and thence to headquarters via Norris. Forty to fifty below zero temperatures were recorded while he was enroute between Mammoth and Gallatin. Extreme low temperatures and blizzard conditions occurred

almost daily throughout the trip. Skiing conditions were the worst he has ever experienced, particularly between Mammoth and Swan Lake, Old Faithful to Thumb, and Canyon to Norris. The only favorable skiing conditions experienced were between Norris and Mammoth on the 21st. There was consolation, however, in the fact that the conditions that made travel difficult were beneficial to wild life, which was observed to be subsisting, in prime condition, on forage areas covered with depths of from 16 to 36 inches of loose, dry snow.

The Assistants Chief Ranger have been directly and continuously in charge of all patrols and other activities in their respective supervisory territories.

420 - Museum Service

The photographs for the Foreign Geyser Case have been received from the New Zealand Government and have been sent to Mr. Haynes for framing. The labels for that case have been written. Work on the Historical case has begun. All available pictures in the offices have been gone over. Mr. Haynes has been written to in regard to obtaining any historical photos of the Upper Basin which he may have in his files. Two charts for the Bear Exhibit at Old Faithful have been lettered with the Grizzly set. The charts average 275 words each and are 24"x17". Mrs. Arnold will add pen and ink sketches of bears. Two more charts are to be made, completing the group of four to be displayed at the Old Faithful Museum. The preliminary sketches of geysers showing their relative heights are complete and Mrs. Arnold is working at present on the final drawings. The remaining labels have been carefully checked and all labels with the exception of those for the Historical case will be in the hands of the printer by March 1st. Final samples of slides have been taken and sent out for the making of photomicrograph transparencies and microscopic slides.

470 - Animals

Forage conditions have been favorable throughout the month, although the snow has been settling and some wind crust has developed since the 20th.

Elk: Rangers have submitted recent counts as follows:

Hellroaring District, including 521 in Cottonwood Basin	1,745
Along Lamar River below Soda Butte Creek, estimated	1,200
Mammoth-Gardiner District	1,150
Feed Grounds at Upper & Lower Slough Creek Ranches	550
Junction of Pebble and Soda Butte Creeks	206

Along Jones and Crow Creeks (Sylvan Pass District)	142
Swan Lake Flats	110
Meadows of West Gardiner River near Fawn Creek	175
Along Cache Creek in the vicinity of Nez Perce Springs	75
Willow Park	12
Along the Firehole; Madison Junction to Old Faithful	26
Along Fan Creek from Gallatin River to Fawn Pass	90
Blacktail District	600
Total	6,079

The known losses since the close of the hunting season consist of 1 cow, a winter kill, and another accidentally killed by running against a fence at the Game Preservation Ranch.

Signs were abundant early in the month on the Divide between Glen Creek and the West Gardiner, along the West Boundary from Gallatin Station to West Yellowstone and along the Madison River from the West Boundary to Madison Junction. There were also numerous signs along the Gibbon and on the meadows along the road from Norris to Mammoth. There are signs of a few small bands along Nelson, Cole and Miller Creeks. Ten cows and calves were counted in isolated groups of two and three during a recent patrol between these points. They appeared to be in fair condition. Elk conditions in general range from fair to good and are far superior to the conditions prevailing during February of last year. Losses, comparative this season with last, are as follows:

This season: Killed by hunters, 166; winter kills, 5; Coyote kills, 2; accidental, 1. Total 174.

Last season: Killed by hunters, 1,671; Winter kills, 67; Coyote kills, 21; Shipments, 184. Total 1,963.

Deer: The deer are appearing in increasing numbers in the vicinities of Mammoth, Gardiner, and Game Preservation Ranch. The counts in these districts are near normal. The usual numbers are also reported at Tower Falls and Old Faithful. The only apparent shortages, when compared with the counts of last year, are in the Crevice, Cottonwood and Hellroaring Districts. The counts and estimates this month are as follows:

Mammoth-Gardiner District	208
Game Preservation Ranch District,	

128 actually counted on feed grounds, estimated	250
Crevice, Cottonwood, Hellroaring District	28
Old Faithful District	22
Tower Falls District	23
Box Canyon (Soda Butte Creek)	8
Compare with 802 reported during February of last year.	539

Losses, comparative this season with last, are as follows:

This season: Killed by hunters, 56; Coyote kills, 8; Winter kills, 6; Accident, 3; Total 73.

Last season: Killed by hunters, 85; Coyote kills, 30; Winter kills, 5; Accidental, 2; Total 122.

Sheep: Recent counts are submitted as follows:

Gardiner Canyon and Mt. Everts	46
Hellroaring District	10
Junction Butte	10
Jackson Grade	2
Absaroka Mountain	9
	77

Compare with total count of 170 reported in February last year.

Losses, comparative with last season to the close of February, are as follows:

This season: Killed by hunters in Wyoming 6; Killed by disease, 0; Total 6.

Last season: Killed by hunters in Wyoming 8; Killed by disease, 10; Total 18.

Considerable losses are known to have occurred during March, April and May of last year, caused by the scabies mites and hair lung worm infections. The losses are believed to have greatly exceeded the reports of losses observed. There is believed to have been a loss of more than 50% of the herd during the spring season of last year. Fortunately, the disease appears to have run its course, as the bands under observation this season appear to have fully recovered.

Antelope: Our largest count this season is 510. Two hundred and twenty-six have been recently counted on their winter range immediately north of the park. Recent counts within the park along the

slopes of Everts and Lopulcher Mountains account for approximately 200.

Losses, comparative with last season to the close of February, are as follows:

This season: Killed by coyotes, 14; Accidental, 1; Total 15.

Last season: Killed by coyotes, 8; Accidental, 2; Unlawfully killed by hunters, 5; Total 15.

Snow conditions are unfavorable on their winter range within the park because of the depths in ravines and hollows and along the north line fence. A crust has formed of sufficient strength to support the weight of coyotes which chase their victims into the snow areas and run them down with comparative ease. Eight have been recently destroyed in this manner within a period of about a week. Efforts are now being made to lure the bands within the park to a winter feed ground immediately north of the boundary where they are provided with an abundance of artificial feed, consisting of alfalfa hay. There is no serious danger from predatory raids in this locality as conditions are less favorable for their success.

Moose: Counts have been secured this season as follows:

Thorofare	97
Canyon	17
Lake	15
Upper Slough Creek	14
Soda Butte	10
Willow Park and West Gardiner Meadows	7
Hellroaring	6
Gallatin	6
Blacktail	6
Bechler	5
Miller Creek	4
Willow Creek	3
Tower Falls	2
Snake River	2
Fountain	2
	203

Rangers have also submitted estimates, in addition to the foregoing actual counts. These estimates are based on signs observed on their patrols. The localities, names of observers and numbers estimated are as follows:

Locality	Observer	Estimated
Thorofare District	Ogston	200
Sylvan Pass "	Dupuis	23
Upper Slough Creek	McBride	16
Pawn Creek District	Woodring	7
Sportsman Lake "	Cottrell	6
Grayling District	Douglas & Miller	3
	Total	255

Moose losses this season, comparative with last year, are as follows:

This season: Killed by hunters in Wyoming, 21.

Last season: Killed by hunters in Wyoming, 14.

Buffalo, Lamar River Herd: The count submitted in the January report gave a total of 736, consisting of 601 adults and 135 calves. The calf herd is in corrals at the Buffalo Ranch where feeding has been in progress since January 9th. Adult feeding started on February 7th, about 30 days later than the usual time. The count on the feed ground has averaged about 570. Other bands have been recently counted in the following localities:

Vicinity of Lamar River Bridge, on west side of river	125
Along Slough Creek from Lamar River to Canyon	65
Vicinity of Tower Falls Station	1
Hellroaring District	1
Total	232

Losses and disposals this season, comparative with last year, are as follows:

This season:	Steers slaughtered for market	100
	Killed because of accidental injuries	2
	Killed because of physical condition and ferocious disposition	2
	Total	104
Last season:	Steers slaughtered for market	23
	Killed because of accidental injuries	1
	Killed because of ferocious disposition	1

Insanity	Duration	Judgment
Dangerous disturbed	Lifetime	Sin
Night Terrors	Lifetime	Sin
Object Cannot Compel	Lifetime	Sin
Open Chest Deficits	Instantaneous	Sin
Overcome Lack	Instantaneous	Sin
Violating Instinct	Lifetime	Sin

Total 45%

Power Cannot Life Insanity, Abnormalities Life Evil Insanity, Sin

Evil Emotion: Lifetime Of Insanity Or Abnormality Or Sin

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Total 25%

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Total 25%

Total 25%

Total 25%

Total 25%

Total 25%

Winter kills	1
Live animals captured and shipped	28
Total	54

Buffalo, Cold Creek-Pelican Creek Herd: Rangers have submitted counts this season as follows:

Pelican Creek Meadows	5
Along Miller Creek	20
Along Calfe Creek	5
Total	30

Snow and forage conditions are unfavorable and the condition of these bands range from poor to fair. They are believed to have suffered heavy losses during the winter of 1927 and 1928, on account of the unusual snow depth, adverse weather and forage conditions.

Bears: The bears have been in hibernation throughout the month but in view of the fact that they will, no doubt, reappear before the date of the next report, the maximum counts of last summer, and losses, comparative this season with last, are noted here for handy reference:

Counts submitted in July, 1928:

Black and brown variety, including 52 cubs	227
Grizzlies, including 31 cubs	103
Total	330

The estimated total for the entire park at that time was 350 blacks and browns, and 145 grizzlies.

Comparative losses are as follows:

This season: Black & brown variety. Killed by hunters on areas bordering the park	14
Grizzlies do	1
Total	15

Last season: Black & brown variety. Killed by hunters on areas bordering the park	15
Grizzlies do	4
" shipped to City of Denver Zoological Park	1
Total	20

Predator Animals: Sixty coyotes have been destroyed since the January report. The total this season is 265. Compare with 258 to the close of February, 1928; 206 in 1927; 225 in 1926, and 163 at the close of February, 1925. This is the mating season for coyotes and lone individuals are rarely seen. Packs of from 5 to 6 are commonly observed. They move along the crest of the ridges, and are extremely alert and unapproachable. They are seriously menacing the antelope herd at this time, as explained in a previous paragraph of this report. (See report of antelope conditions).

Small Animals: Rangers have reported more signs of small animals this season than during any winter of recent years. There is an apparent substantial increase of marten, otter, muskrat and mink in the order named. They have been seen in such profusion in the Old Faithful, Thorofare, Lake and Canyon districts that it is impracticable to estimate their numbers. Rangers estimate 2[illegible] otters along the shores of Yellowstone Lake and report many signs of mink. Beaver activities have been normal this season. There have been a few signs of fox and frequent signs of lynx.

Water Fowl: Several varieties of ducks, Canada Geese, and an occasional pair of swans are still seen on the open waters of the park, particularly along the Madison, Firehole, Gibbon and Yellowstone Rivers. Their numbers will, no doubt, be greatly augmented during the course of the next few weeks.

Buffalo and Other Ranch Operations: Ranch activities have consisted principally of the following:

Buffalo Ranch: Care and feeding of Buffalo herd, team and saddle horses and ranch property.

Yancey Ranch: Care and feeding of Park Service and ranger horses, average number 12. This work is performed by the ranger at Tower Falls station, in addition to his patrols and other protection service duties.

Game Preservation Ranch: Feeding deer and antelope herd (198 deer and 226 antelope), and daily patrols of their winter range outside of the park.

A full report of hay fed at the various ranches will be submitted when wild animal feeding is concluded. They generally abandon the feed grounds on or before April 10th.

480 Natural Phenomena

A decided increase marks the activity of the Mammoth Formations for the month of February. Hymen Terrace is retaining its activity, being more active at present than at any time during the past year. Narrow

Gauge has extended its activity along the entire ridge and is a most beautiful sight at the present time. Minerva has held up well and the decrease of activity which usually comes in the spring or early summer has made no signs of starting as yet. New Highland and Old Angel Terraces show very little change in activity, while New Angel is more active than it has been for several months.

A new spring has broken out 50 yards west of the vent of Blue Springs. This spring is so hot and so active that the algae have not gained a foothold within 6 inches of the vent. This spring spouts to a height of 10 inches three times per minute.

Blue Springs, active all winter, show a decided increase and are more active at the present than at any time since the close of the tourist season.

The following observations are for dates, January 30th to February 13th, inclusive, and were made by Park Ranger R. H. Lemmer.)

Surface Water - The amount of surface water present in the basin was increased slightly over that of January, which in turn was greatly increased over that of December.

Frozen out Sinter - Evidences of this method of sinter formation were seen in several places over the basin in amount comparable to previous reports.

Congress Pool - This feature has experienced another of its revivals. In January it was to all appearances entirely dry; all water being out of sight and by sound judged some 20-30 feet below the rim. February 1st it was observed that the water level was up to only 8 feet below the rim and the pool was spurting this water to 5-6 feet height nearly constantly.

Locomotive - Playing 3-3½ feet high most of the time.

Onyx - Playing 2-3½ feet high much of the time.

Arsenic Spring - The small openings were playing normally; no unusual activity was noted as reported for the larger opening last month.

Constant Geyser - No activity observed. From all indications it is still inactive as since November.

Whirligig Geyser - Durations 2-4 minutes, heights 6-15 feet, and intervals irregular as in January.

Valentine Geyser - Not observed active.

Lodge Geyser - Playing 50-8. feet on the incline for 6-8 minutes at

unknown by supposedly irregular intervals.

Black Growler - No change noticeable from January activity.

New Crater Geyser - Playing to heights of 2-5 and 12-15 feet from north and south orifices respectively. Durations from 1½-2½ minutes; intervals irregular.

Minute Man Geyser - Playing 5-12 feet high for 20-50 seconds at intervals of 1½-3 minutes.

Vixen - Playing 7-10 feet high by short irregular spurts for durations of a few seconds.

Lower Geyser Basin - No unusual activity was observed in this basin, and the usual trip over it was in the main omitted. The New Geyser is known to have been active, and from evidences at a distance in no way changed from the last observed activity. No intervals were obtained.

Mid-way Basin: The amount of surface water was greatly increased here. New evidences of sinter freezing out of solution were observed in the runs of Excelsior and Indigo. The amount of run-off water from these two formations was greatly in excess of that observed at any previous time. Flood Geyser was playing 4-12 feet high irregularly as usual.

Upper Geyser Basin

Biscuit Basin - Was included in the list of winter temperatures taken and following this report.

Artemisia - Playing 30-40 feet high for 7-9 minutes at irregular intervals.

Sapphire Pool - Boiling up 3-4 feet high and 6-7 feet high at irregular but longer intervals.

Jewel - Erupting every 7-9 minutes by a single spurt 7-10 feet high and lasting 15-20 seconds.

Avoca - (Old Mustard) Playing 4-5 feet high for 1-1½ minute durations at irregular intervals.

Black Sand Basin:

Punchbowl - Has been boiling up 5-10 inches as usual.

Spouter - Playing 3-5 feet high most of the time with an occasional eruption 15-20 feet high.

Cliff - No unusual or high eruptions known of lately: but it is boiling

2-3 feet high most of the time as usual.

Handkerchief Pool - The usual convection currents in the water are absent as reported in January.

Upper Basin Proper:

Riverside Geyser - Playing on an interval from 7½-8 hours long, to maximum heights of 90-100 feet from 24-28 minutes.

Grotto & Rocket - Playing 3-4½ feet high irregularly.

Daisy - Playing 60-75 feet high for 2½-3 minutes at intervals of 76-89 minutes.

Oblong - Playing 20-25 feet high for close to 5 minutes at 10-12 hour intervals.

Giant - Played January 26th; and on February 8th. The latter time to a height of 150-200 feet for 62 minutes.

Grand - Playing quite regularly on a 13-14 hour interval. Heights run from 150-180 feet; durations from 22-24 minutes.

Sawmill - Playing 12-18 feet high for long durations at irregular but short intervals.

Castle - Playing daily from 25-60 feet high for 25-30 minutes.

Lion - Playing 40-70 feet high for 2-2½ minutes at 3-4 hour intervals.

Sponge - Playing 3-4 feet high frequently.

Dragon - Playing 5-8 feet high for 3-4 minutes irregularly.

Beehive - Played sometime between January 22nd and February 2nd; and played following Giantess in the night of February 4th.

Giantess - Played on the afternoon of February 4th for over 4 hours. The period in which water was erupted lasting only about 30 minutes, and the rest of the four hours being given to steam and enough accompanying water to form a fine mist coming down. It played also on January 14th, hence the interval was 22 days. The eruption furnished a chance for observations of the effect of the run-off waters from eruptions on the frozen out sinter so heavily formed in the Giantess runs. The great amounts of water thrown out carried fully 95% of such sinter, in place before the eruption, into the Firehole River. From these two eruptions it seems that the Giantess may be coming back into activity.

Old Faithful - Efforts were made to get heights with the hysometer, both of the main jet and the geyser; but the weather was so unfavorable that no results certain enough to keep were obtainable. The first six days were too warm and cloudy, the leaden background of sky making it impossible to distinguish the water from the steam and sky. The remaining days were so cold that even if they had been clear the eruptions threw up so much steam that it was impossible to get good results. This was especially true of heights of the main jet as this follows the geyser and by that time too much steam had arisen from the column to allow differentiating the steam and water. The maximum heights run from 120-150 feet, the intervals from 56-64 minutes, and the durations from 3-4 minutes and 10 seconds.

Inactive Group - Of the geysers generally included here only Lioness has been inactive all month as far as is known.

Note on Hymen Terrace at Mammoth Hot Springs - Here the amount of run-off water has increased from 3/8 inch in late January to a full 1 inch the 16th of February to date - on weir. This being the largest run-off observed, and an increase of 166%.

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510 - Increase or Decrease of Travel

All entrance and exit travel since the January report has been via the North Gateway. This travel has consisted principally of visiting clergymen, salesmen, business callers and friends of local residents. Winter season visitors are not registered upon entering or leaving the park but the travel observed by the ranger at the Gardiner Gateway is as follows: Cars, 23; Visitors, 52.

The pre-season travel at the close of February this year consists of 2,989 visitors traveling in 1089 cars. Compare with 2,156 visitors in 773 cars at the close of February last year, 1,299 visitors in 479 cars in 1927, and 514 visitors in [illegible] cars at the close of February, 1926.

520 - General Weather Conditions

521 - In the Park

The mean temperature for the month was the lowest in seven years and 6° colder than February, one year ago. Except for the first four days, temperatures were generally below normal, the greatest [illegible] departures occurring at the end of the first week. The 7th was the coldest day with a mean temperature of -12°. The minimum temperature on this date was -27°, the lowest for the month and the lowest of any February since 1914. The highest temperature was 55° on the 2nd.

Snow occurred on all but four days but generally in small amounts, 2.1 inches being the greatest 24-hour fall. The total snowfall for the month was 8.3 inches, 5.9 inches below the normal but 3.2 inches more than February, one year ago. The total snowfall equaled 0.77 inch of precipitation, or water, about 60 percent of the normal amount. Snow averaged 15.9 inches in depth on the ground at the end of the month, the most in six years. The water content of the snow cover was 3.10 inches.

The percentage of the possible sunshine was near normal although somewhat more than the usual amount of cloudiness occurred. There were 4 clear days, 7 partly cloudy, 17 cloudy, and 16 with 0.01 inch, or more, of precipitation.

The wind movement was below the normal with an average velocity of 6.4 miles per hour. Moderately strong winds occurred on several days but light winds were general. The highest velocity was 26 miles per hour from the southwest on the 20th. The prevailing direction was southwest.

Snow Depths: Snow depths throughout the park, with comparative figures for 1926 and 1928, are noted as follows:

	1927	1926	1925
	Inches	Inches	Inches
Buffalo Ranch	17	28	22
Soda Butte Cabin	24	30	24
Cooke Ranger Station	62	45	30
Tower Falls	18	19	20
Old Faithful	52	30	40
Lake	44	40	36
Thorofare	60	50	50
Hellroaring	16	19	20
Norris	36	33	34
Canyon	54	36	46
Thumb	45	42	36
Riverside	50	28	33
Gallatin	24	26	22
Sylvan Pass	55	45	34
Snake River	75	61	57
Bechler River	107	55	81
Upper Slough Creek	36	42	40

Depths are reported at other points as follows:

Cabin Creek	36
Mountain Creek	42
Fox Creek	50

Two Ocean Plateau	72
Aster Creek	60
Continental Divide	80
Cascade Cabin	100
Pelican Creek	45
Mist Creek Divide	60
Cold Creek Cabin	42

Extreme low temperatures occurred during the cold wave of the 6th and 7th, as follows:

Riverside	-50 degrees
Buffalo Ranch	-47 "
Lake Station	-40 "
Mammoth	-27 "
Snake River	-23 "
Bechler	-21 "

540 - Visitors

Mr. C. B. Kinsey, representing the M-G-M News came into the park at Gardiner on February 5th, to secure some pictures of the animals and winter life at Mammoth Hot Springs. Some pictures were taken on the Mammoth terraces in which a number of the local residents participated. Also, Mr. Kinsey secured some movies of the antelope and deer on the Game Preservation Ranch outside the north entrance. He left via Gardiner on the 26th.

900 - Miscellaneous

Post Office: No unusual features to report, as business was about normal for February.

Church Services: No services were held at Mammoth during the entire month. The roads between Livingston and Gardiner were impassable at times during the month and at no time were they comfortable for travel. This probably hindered the ministers from attempting to come up to the park to hold services.

Hospital and Medical Service: Dr. Frank G. Grace, resident physician, reports 72 calls during the month, which includes both office and residence calls.

On February 9th a carnival and dance was held in the canteen, which was well attended by residents of both Gardiner and Mammoth. Much pleasure was derived by members of the community from parties, skating, skiing, volleyball, roller skating and coasting.

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On February 27th official word was received that the President

had signed on February 26th the bill which created the Grand Teton National Park south of the Yellowstone. This was joyful news to those in the National Park Service who have watched for years the fight to secure for this stupendous mountain scenery a national park status.

Very truly yours,

Joseph Joffe

Acting Superintendent.

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UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

REPORT OF TELEPHONE AND TELEGRAPH BUSINESS

Yellowstone National Park for the Month of February, 1929

	This Month	This Month Last Year	Increase	Percent Increase
LOCAL BUSINESS				
Miles of circuit maintained,	498	462	36	.078
No. of telephones connected,	155	146	9	.061
No. of measured service calls,				
No. of other local calls,				
Total No. of local calls,	4066	5054	-988	-.19
Peak load in calls per day,	235	226	9	.04
Receipts from measured service calls,				
" " coin boxes,				
" " telephone rental,				
TOTAL RECEIPTS				
LONG DISTANCE BUSINESS				
No. Outbound calls,	32	40	-8	-.20
No. Inbound calls,	53	75	-22	-.29
TOTAL LONG DISTANCE CALLS				
Peak load in calls per day,	8	10	-2	-.20
Receipts from Long Distance business,	45.90	40.45	5.45	.13

(All of this revenue accrues to the Mountain States Tele & Tele Co.)

TELEGRAPH BUSINESS

Messages via Western Union,				
Messages via				
TOTAL MESSAGES				
Receipts from telegraph business,				
No. of money transfer messages,				
" " " " receipts,				
TOTAL RECEIPTS TELEPHONE & TELEGRAPH DEPTS-				

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

REPORT OF TELEPHONE AND TELEGRAPH BUSINESS

National Park for the Month of

	Month	Last Year		Increase
	Time	Month	Increase	Percent
		Time		

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UNITED STATES

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

STATUS OF PERSONNEL

YELLOWSTONE National Park for the Month of FEBRUARY, 1929

	This Month	This Month Last Year
Number of employees beginning of month	72	69
Number of additions.	1	0
Total	73	69
Number of separations.	1	0
Number of employees close of month . .	72	69
Number of promotions during month. . .	0	0
Aggregate amount of annual leave taken	77	89
Aggregate amount of sick leave taken .	20	46
Aggregate amount of leave without pay.	30	0

UNITED STATES

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

STATUS OF PERSONNEL

National Park for the Month of

	This Month	Same Month Last Year
Number of employees beginning of month		
Number of additions		
Total		
Number of separations		
Number of employees [illegible] of month		
Number of promotions during month		
Aggregate amount of annual leave taken		
Aggregate amount of sick leave taken		
Aggregate amount of leave without pay		

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UNITED STATES

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

*ELECTRICITY GENERATED, SOLD, USED, ETC.

..... National Park for the Month of .....

Yellowstone February 1922.

	This Month	This Travel Year To Date	This Month Last Year	Last Travel Year To Date	Increase for Travel Year Number	Increase for Travel Year Percent
Current generated, ...						
Sold to park operators, . . .	56320.0	553130.0	54030.0	519380.0	33750.0	6%
Sold to others, ...	179.5	93925.2	174.3	78869.8	15385.4	20%
Furnished to other Governmental agencies, ...						
Used by National Park Service, lost in transit, etc., . . .						
Total current generated, . .	56140.5	459204.8	53855.7	440320.2	18884.6	4%
	56320.0	553130.0	54030.0	519380.0	33750.0	6%

Amount receivable from the sale of electricity, ... $ .....

8.98

* Indicated by K. W. H.

UNITED STATES

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

"ELECTRICITY GENERATED, SOLD, USED, ETC.

Yellowstone National Park for the Month of

	This Month	This Travel Year	This Month Last Year	Last Travel Year To Date	Increase for Travel Year Number	Increase for Travel Year Percent
Current generated,						
Sold to park operators,						
Sold to others,						
Furnished to other Governmental agencies,						
Used by National Park Service,						
Lost in transit, etc.,						
Total current generated,						

Amount receivable from the sale of electricity, $ .....

* Indicated by K. W. H.

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UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

TRAVEL REPORT

Yellowstone National Park for the Month of February 1929.

	This Month	This Travel Year To Date	This Month Last Year	Last Travel Year To Date	Increase for Travel Year	
					Number	Percent
PRIVATE TRANSPORTATION:						
Cars first entry,	23	1030	46	773	257	33
Cars reentry,		36			36	
Motorcycles,		3			3	
Total motor vehicles,	23	1069	46	773	296	38
Persons entering via motor vehicles,	52	2989	115	2156	833	39
Persons entering via other private transportation,	52	2989	115	2156	833	39
Total persons entering via private transportation,						
OTHER TRANSPORTATION:						
Persons entering via stages,						
Persons entering via trains,						
Persons entering otherwise,						
Total other transportation,						
GRAND TOTAL ALL VISITORS,	52	2989	115	2156	833	39

	This Year	Last Year	Increase	
			Number	Percent
Automobiles in public camps during month,				
Campers in public camps during month,				

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

TRAVEL REPORT

	Month This Year	To Date This Year	Month Last Year	To Date Last Year	Increase for Travel Year Number	Increase for Travel Year Percent
Visitors in public cars during month						
Visitors in public cars during month						

	This Year	Last Year	Increase Number	Increase Percent

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UNITED STATES

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

STATUS OF AUTHORIZED PROJECTS

.....Yellowstone..... National Park for the Month of ...February 1939.....

Description of Projects	Percent Constructed To Date	Percent Constructed This Month	Percent Constructed Last Month	Probable Date of Completion

No change in projects during the month.

UNITED STATES

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

STATUS OF AUTHORIZED PROJECTS

National Park for the Month of

Description of Projects	Percent Change To Date	Percent This Month	Percent Last Month	Probable Completion

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UNITED STATES

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

REPORT OF PARK REVENUES

Yellowstone National Park for the Month of February 1929.

	This Year	Last Year
Park revenue on hand beginning of month,	265,052.18	
Received,	5,502.42	
Total,	270,554.60	
Remitted,	270,554.60	
On hand close of month,	0.00	

Park revenues received this year to date,	270,554.60
Park revenues received last year to date,	237,179.13
Increase,	33,375.47
Percent of increase,	14%

DIETER
BINDS